IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

WANG et al.

Appl. No.: To Be Assigned

Filed: Herewith (March 31, 2004)

For: Hardware-Efficient

Implementation of Dynamic Element Matching in Sigma-Delta

DAC's

Confirmation No.: To Be Assigned

Art Unit: To Be Assigned

Examiner: To Be Assigned

Atty. Docket: 1875.3750001/RES/GSB

Information Disclosure Statement

Commissioner for Patents PO Box 1450 Alexandria, VA 22313-1450

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may

not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

Applicants have checked the appropriate boxes below.

- 1. Statement under 37 C.F.R. 1.704(d). Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this information disclosure statement.
- 2. Filing under 37 C.F.R. § 1.97(b). This Information Disclosure Statement is being filed within three months of the date of filing of a national application other than a continued prosecution application (CPA), OR within three months of the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, OR before the mailing date of a first Office Action on the merits OR before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No statement or fee is required.
- 3. Filing under 37 C.F.R. § 1.97(c). This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final

Reject	ion, or Notice of Allowance, or an action that otherwise closes prosecution
in the	application.
a.	Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of
	information contained in this Information Disclosure Statement was first
	cited in any communication from a foreign patent office in a counterpart
	foreign application not more than three months prior to the filing of this
	Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).
□ b.	Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of
	information in this Information Disclosure Statement was cited in a
	communication from a foreign patent office in a counterpart foreign
	application and, to my knowledge after making reasonable inquiry, was
	known to any individual designated in 37 C.F.R. § 1.56(c) more than
	three months prior to the filing of this Information Disclosure Statement.
	37 C.F.R. § 1.97(e)(2).
□ c.	Attached is our PTO-2038 Credit Card Payment Form in the amount of
	\$ in payment of the fee under 37 C.F.R. § 1.17(p).
Filing	under 37 C.F.R. § 1.97(d) This Information Disclosure Statement is being
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of a Fi	nal Rejection or Notice of Allowance, but before payment of the Issue Fee.
Enclos	ed find our PTO-2038 Credit Card Payment Form in the amount of
\$	in payment of the fee under 37 C.F.R. § 1.17(p); in addition:
	in the sign of a Fine Enclose

- a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).
- b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).
- 5. The document(s) was/were cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided in satisfaction of the requirement for a concise explanation of relevance. 1138 OG 37, 38.
- 6. A concise explanation of the relevance of the non-English language document(s) appears below:
- 7. Copies of the documents are submitted herewith.
- 8. Copies of the documents were cited by or submitted to the Office in an IDS that complies with 37 C.F.R. § 1.98(a)-(c) in Application No. 10/354,159, filed

January 30, 2003, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, copies of these documents are not attached. 37 C.F.R. § 1.98(d).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

George S. Bardmesser Attorney for Applicants Registration No. 44,020

Date: ___March 31, 2004

1100 New York Avenue, N.W. Washington, D.C. 20005-3934 (202) 371-2600

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	1	FORM P	PTO-1449		ATTY. DOCKET NO. 1875.3750001/RES/GSB FIRST NAMED INVENTOR APPLICATION NO. To Be Assigned					
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INITIAL		NUM		DATE	NAME	CLASS		FILING DATE		
	AA1	US-5,305,004		04/1994	Fattaruso, John W.	341	120			
	AB1	US-5	5,404,142	04/1995	Adams et al.	341	144			
	AC1	US-6	5,124,813	09/2000	Robertson et al.	341	143			
_	AD1	US-6	6,570,521	05/2003	Schofield, William G. J.	341	144			
	AE1	US-6	6,577,261	06/2003	Brooks et al.	341	144			
	AF1	US-6	5,614,377	09/2003	Adams et al.	341	144			
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	AR	1	Adams, R Scramblin	. <i>et al</i> ., "A 113 g," <i>IEEE Jour</i>	B-dB SNR Oversampling D nal of Solid-State Circuits	AC with Seg 33:12:1879-	gmented Noise-S -1886 (Decembe	Shaped r 1998)		
	AS	1	Annovazz CMOS Te	i, M. <i>et al</i> ., "A chnology," <i>IE</i>	et al., "A Low-Power 98-dB Multibit Audio DAC in a Standard 3.3-V 0.35-μm ogy," IEEE Journal of Solid-State Circuits 37:7:825-834 (July 2002)					
	АТ	1	Baird, R. a pp. 13-16	and Fiez, T., " (1995)	Improved $\Delta\Sigma$ DAC Linearity Using Data Weighted Averaging," <i>IEEE</i>					
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ATTY. DOCKET NO.	APPLICATION NO.	
1875.3750001/RES/GSB	To Be Assigned	
FIRST NAMED INVENTOR		
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FORM PTO-1449 INFORMATION DISCLOSURE STATEMENT

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	AR	Chen, F. and Leung, B., "Some Observations on Tone Behavior in Data Weighted Averaging," Proceedings of the IEEE 1998 International Symposium on Circuits and System, I-500 through I-503 (May 31 - June 3, 1998)								
	AS	Chen, K. and Kuo, T., "An Improved Technique for Reducing Baseband Tones in Sigma-Delta Modulators Employing Data Weighted Averaging Algorithm Without Adding Dither," IEEE Transactions on Circuits and Systems- II: Analog and Digital Signal Processing 46:1:63-68 (January 1999)								
	Fishov, A. et al., "Segmented Mismatch-Shaping D/A Conversion," <i>IEEE</i> , pp. IV-679 through IV-682 (2002)									
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	AS	<u>3</u>	Galton, I., Circuits a	"Spectral Shap nd System-II: A	oing of Cir nalog and	cuit Errors in Di 1 Digital Signal	igital-to-An Processing	alog Conv 44:10:80	/erters," <i>IEEE T</i> 8-817 (October	ransactions on 1997)		
	АТ	3	Grilo, J. e Single-Ch	t al., "A 12-mW ip Bluetooth Tra	ADC Del	ta-Sigma Modu ," IEEE Journal	lator With 8	30dB of D ate Circu	ynamic Range I its 37:3:271-278	Integrated in a 3 (March 2002)		
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	AR	4	Jensen, Synthesi	H. and Galton, I	., "A Lo	w-Complexity Dy on Circuits and S	namic Elei	ment Matc	hina DAC for Dir	ect Digital Processing,	
	AS	4	Kwan, T.	et al., "A Stered te Circuits 31:12	o Multib 2:1881-	oit ΣΔ DAC with A 1887 (December	synchrono 1996	us Master	-Clock Interface,	" IEEE Journal of	
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	AR	<u>5</u>	Radke, R. Proceeding 1999)	et al., "A Spurious gs of the IEEE 19	s-Free Delta-Sigma DAC Using 99 Custom Integrated Circuits	g Rotated Conference	Data Weighted Av ce, pp. 125-128 (N	eraging," //ay 16 - 19,			
	AS	<u>5</u>	IEEE Journal of Solid-State Circuits 35:8:1074-1084 (August 2000) Vadipour, M., "Techniques for Preventing Tonal Behavior of Data Weighted Averaging Algorithm in								
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	AR	<u>6</u>	Converters	al., "Simplifie s," <i>IEEE Tran</i> : 4-1027 (Nove	saction	c for First-Order and s on Circuits and Sy 001)	l Second- /stems-ll:	-Order Mis · <i>Analog a</i>	smatch-Shaping l nd Digital Signal	Digital-to-Analog Processing	
AS 6 Welz, J. and Galton, I., "A						essary and Sufficien 002)	nt Condition	on for Mis	match Shaping ir	n Multi-bit DACS,"	
	АТ	<u>6</u>	Yasuda, A Matching,"	. et al., "A Thi IEEE Journa	ird-Ord	er Δ-Σ Modulator Us lid-State Circuits 33:	sing Seco 12:1879-	nd-Order 1886 (De	Noise Shaping D cember 1998)	ynamic Element	
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